Welcome

Montgomery County Rapid Transit System

Corridor Advisory Committee (CAC) Kickoff Meeting

Saturday, February 28, 2015

AGENDA

8:30 AM	**Sign In/Meet and Greet**	
9:00 AM	**Welcome/Agenda/Purpose & Expectations of Meeting**	Andrew Bing, Lead Facilitator
9:15 AM	**County Vision**	Montgomery County Executive Isiah Leggett
9:30 AM	**Agency Roles**	Kevin Quinn, Director, Office of Planning and Programming, Maryland Transit Administration Greg Slater, Director, Office of Planning and Preliminary Engineering, Maryland State Highway Administration Al Roshdieh, Acting Director, MCDOT
9:45 AM	**Keynote Presentation**	Cliff Henke, BRT Specialist

AGENDA (cont)

10:30 AM	**Montgomery County's Rapid Transit System (RTS)**	Joana Conklin RTS Development Manager, MCDOT
10:45 AM	**Wrap-up/Transition to CAC Meetings**	Andrew Bing

Break

11:00 AM **Individual CAC Meetings**

MD 355 South CAC (Cafeteria)	Yolanda Takesian, Facilitator
MD 355 North CAC (9th Floor Conference Room)	Mary Raulerson, Facilitator
MD 586 CAC (10th Floor Conference Room)	Denise Watkins, Facilitator
US 29 South CAC (Large Auditorium – Main Floor)	Jennifer Kellar, Facilitator
US 29 North CAC (2nd Floor Conference Room)	Alan Straus, Facilitator

12:30 PM **Meeting Ends**

Montgomery County
RAPID TRANSIT

BRT CORRIDOR STUDIES

SHA State Highway Administration

Montgomery County Maryland

MTA Maryland

Keynote Speaker

Cliff Henke
BRT Specialist

What Is Bus Rapid Transit (BRT), and What it Can Do for Your Community

February 2015



Agenda

- What Is Bus Rapid Transit (BRT)
- Elements of BRT
- Examples of Implementation
- Questions to Think About

What is Bus Rapid Transit (BRT)?

- BRT is a “rapid mode of transportation that can provide the quality of rail transit and the flexibility of buses”

- BRT is a “flexible, permanently integrated high-performance system with a quality image and a strong ID”.

BRT is now a well-accepted mode…

Basic Features

- Distinct stations and vehicles
- Priority vs. other traffic
- Frequent service
- Fewer stops

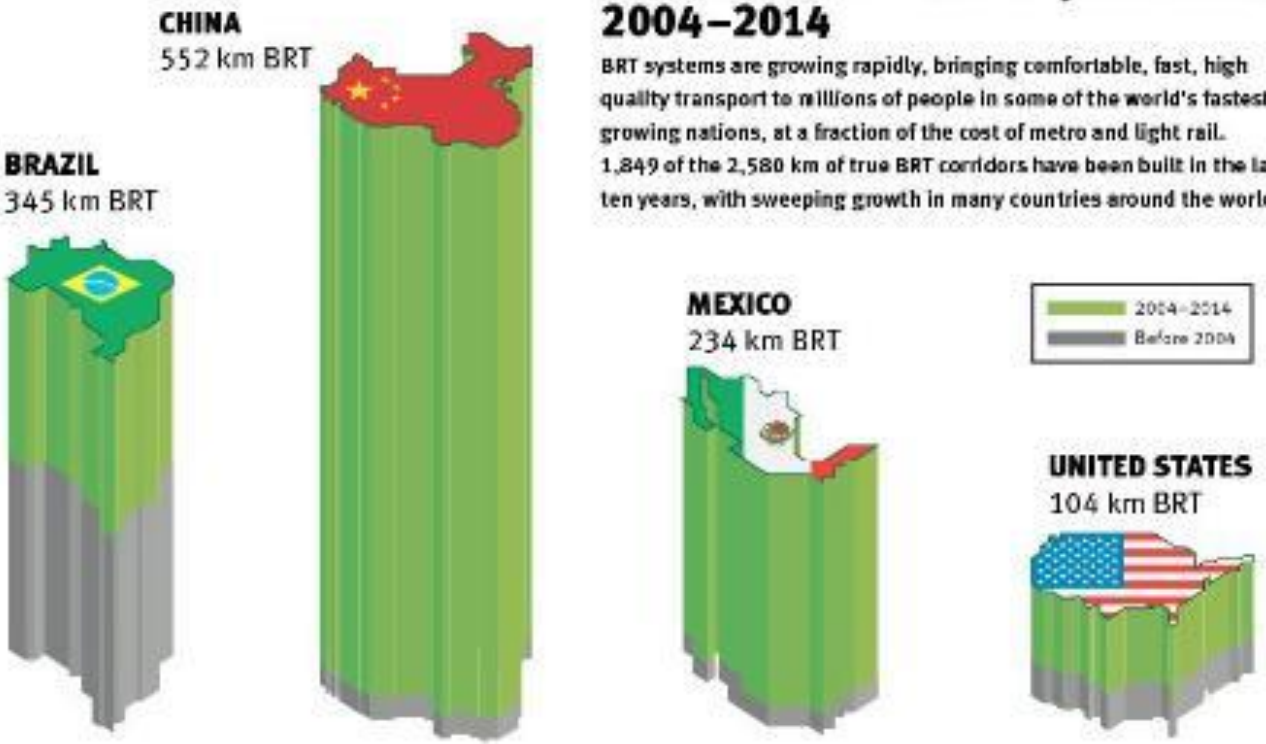
Outcomes

- Faster
- More convenient
- Higher quality
- Catalyst to development
- Addresses rapid development growth

ITDP

A Global Rise in Bus Rapid Transit: 2004–2014

BRT systems are growing rapidly, bringing comfortable, fast, high quality transport to millions of people in some of the world's fastest growing nations, at a fraction of the cost of metro and light rail. 1,849 of the 2,580 km of true BRT corridors have been built in the last ten years, with sweeping growth in many countries around the world.



How much transit do you get for a billion dollars? Capital cost of km per billion USD

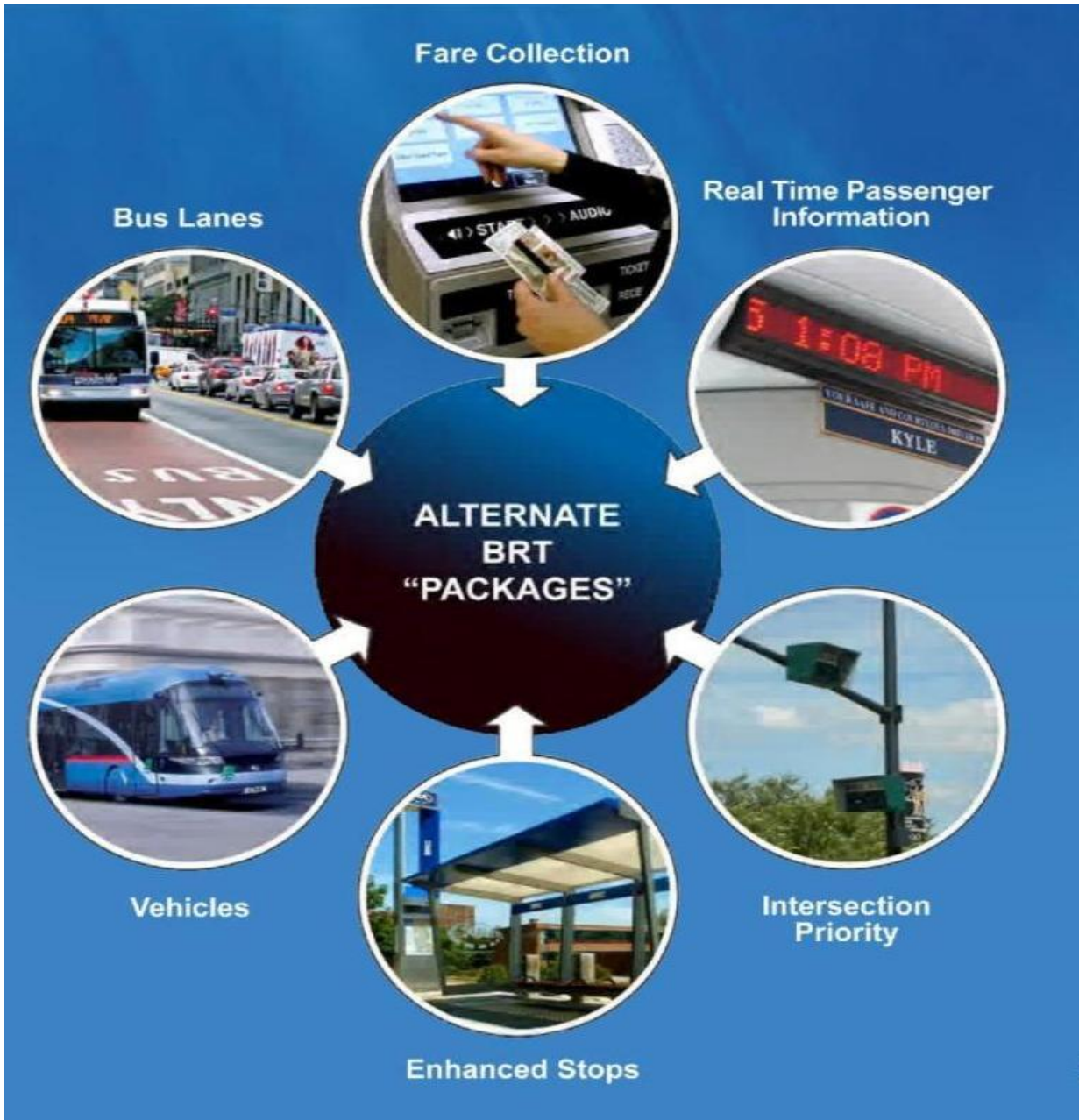
For more information, visit brtstandard.org

BRT Growth in U.S.

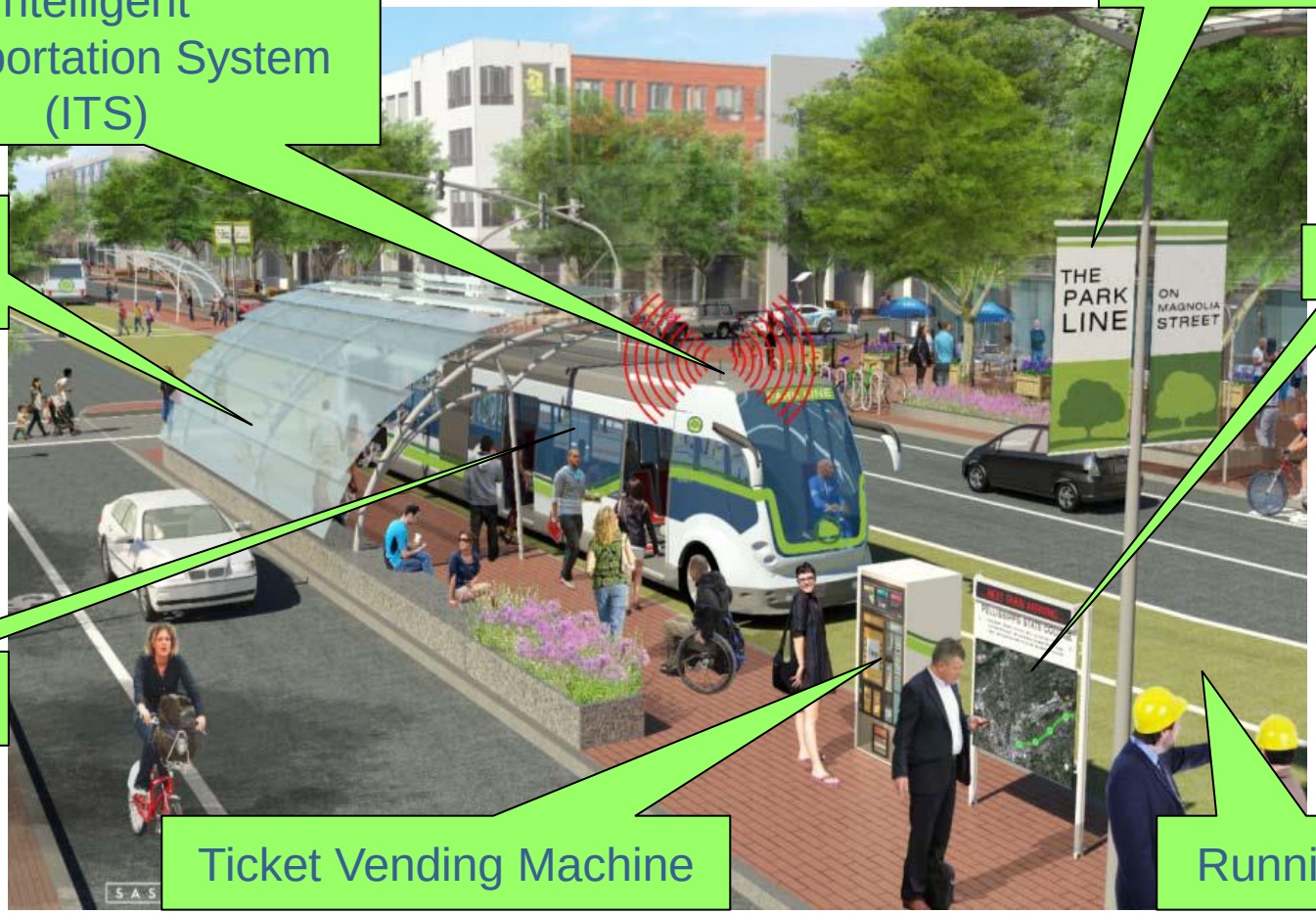
…but it is really a menu.

Running Ways	Vehicles	Stations	Service Plan	Technology
Select one or more from each column				
Mixed traffic	Standard	Branded stop	Circulator	Vehicle guidance
Separate roadway	Standard with brand	Branded shelter	Limited stops	Traffic signal priority
Dedicated lanes	Stylized		Express	Bridgeplates
Median or curb lanes	30, 40 and 60 lengths	Shared with Local bus	Combination of route types	Real-time Passenger info
Queue jumps/ bypasses	Guided/ unguided	Rail-like station	Reconfigured network	Active electronic suspension
Tunnel segments	CNG	Multimodal terminal	Minimal brand	Wi-fi
Shared or semi-exclusive lanes	Hybrid-electric		Family of brands	Vehicle location
Shared HOV or bus-only highway lanes	Advanced propulsion		Complete brand marketing campaign	Pre-payment fare collection

Elements of a BRT system



BRT Elements



How Do Markets Affect the Design Differences?

Markets Served

- Long or short-distance trips?
- Circulation within a “place”, or moving between “places”?
- Quick walk-up access or large capture area?

Design Differences

- Type of right-of-way
- Station spacing and design
- Type of vehicle
- Busway design
- Power source
- Signals and control

BRT Applications and Examples

Circulator	Local/ Linehaul	Feeder to RT Network	Interurban	Commuter/ Regional
Denver 16th St. Mall, Orlando LYMMO	Eugene, EmX S. Bernardino SBx Fresno Q	L.A. Metro Rapid, Oakland Rapid Chicago Jeffrey Jump	Albany BusPlus Chicago Pace Aspen Veloci	Phoenix Rapid, San Diego I-15, LA Silver Line, Denver US-36


Laurel Canyon/Valley Village
Metro
Orange Line
Ticket Required Beyond This Point
901 STATION
GIBRALTAR
SAVINGS

Bi-Directional Lane – Eugene, Oregon


METRO STOP
25 Troost
MAX
TROOST


RAPID
2030
2030
1
3


VA Hospital
Green Line
CSUSB
North
EMERGENCY
GREEN LINE
Barton Rd

Example of a BRT lane enforcement (San Bernardino)

Examples of BRT Vehicles

Eugene (OR) EmX (from LTD)

Kansas City MAX (from KCATA)

Santa Clara (CA) Rapid (from VTA)

Cleveland Silver Line (from GCRTA)

Boston Silver Line (from MBTA)

Las Vegas MAX (from RTC of Southern NV)

Los Angeles Metro Rapid

York (ON) viva (from flickr.com)

Los Angeles Orange Line (from flickr.com)

Examples of BRT Vehicle Interiors

Orlando LYMMO

Van Hool 300 AG Vehicle

Los Angeles Orange Line (from MTA)

York Viva

LA's Metroliner for Orange Line

Next Generation BRT Vehicle

York Viva's New Vehicle Interior

(York, Ontario in Canada)

BRT Stations

- Attractive and Safe
- Lighting
- Customer Information
- ITS
- Off-bus Fare Collection
- Level Boarding
- Artwork

(“Metroway” Station in Alexandria, VA)

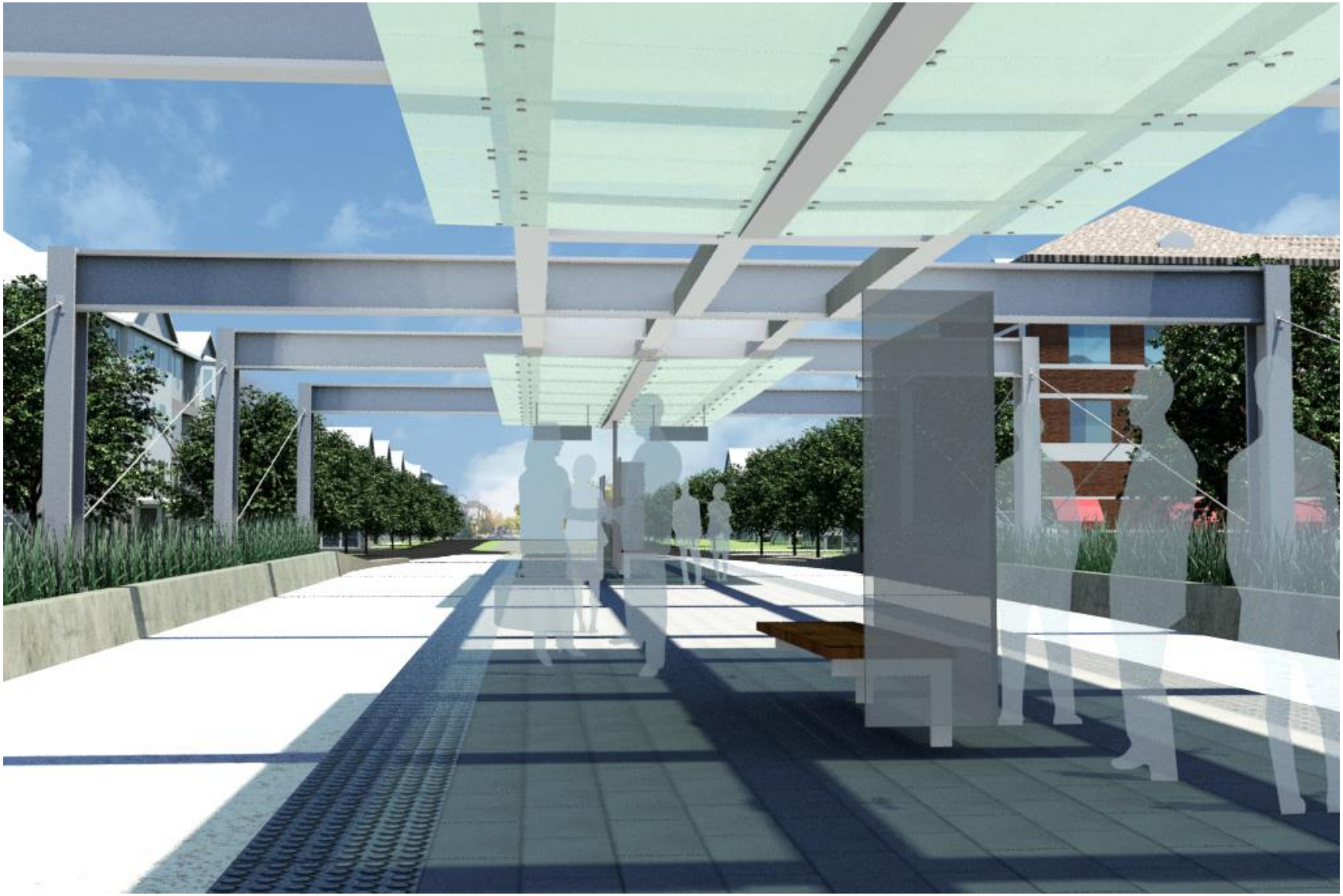
(“EmX” Station in Eugene, OR)

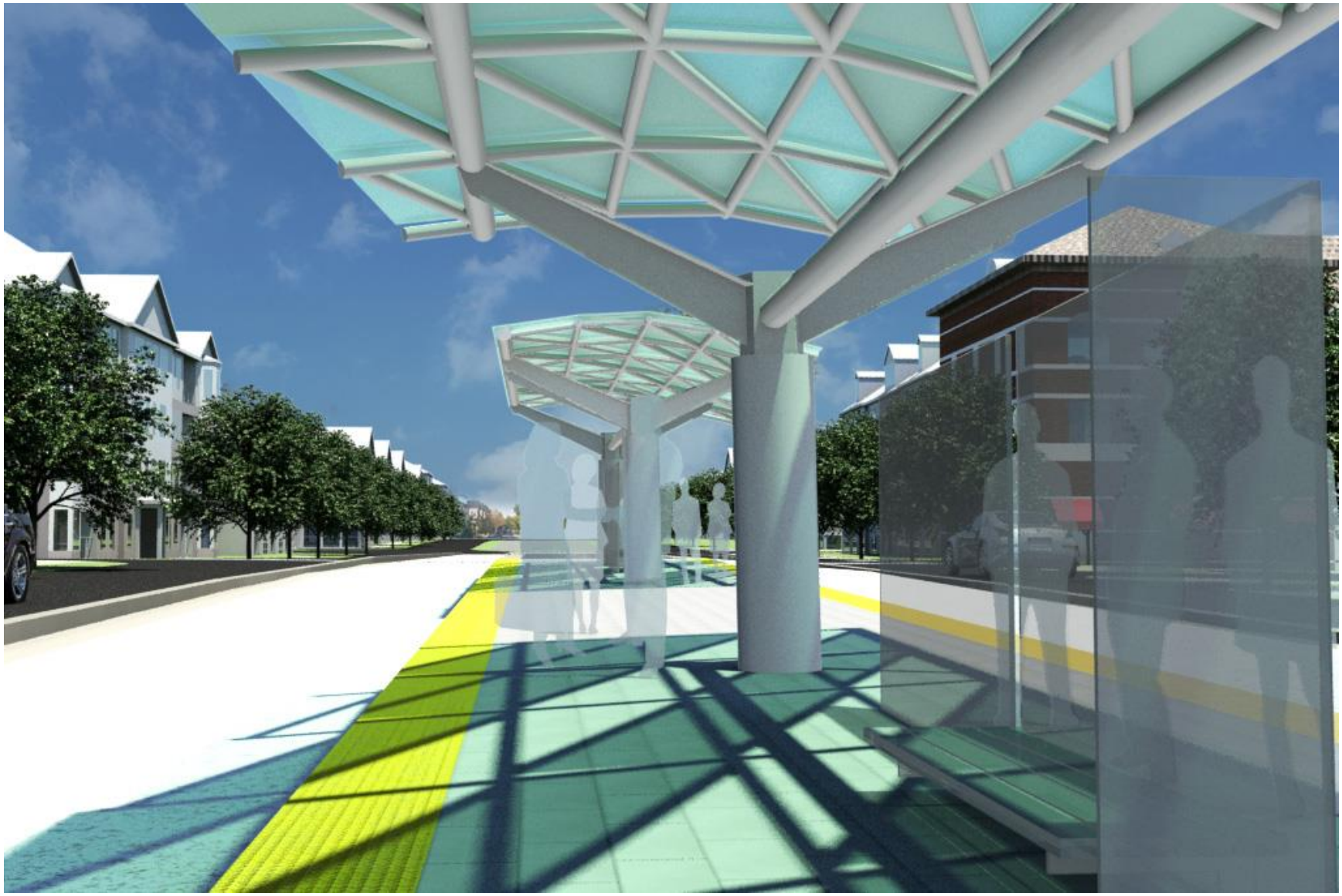

C-TRAN
free


Busway Information
Due to high demand bus operators will be running additional services on Sunday.
Final buses of the day remain as timetabled
busway


WABASH
WASHINGTON
STARBUCKS
COFFEE
usbank
NEWSPAPERS
UNION STATION


SPRINGFIELD STA






SILVER LINE

Branding

- "Branding is conveying a recognizable, consistent, and unique system identity and image.
  - **Vehicles** – branded using design, color, graphics, and signage
  - **Stations** – branded using design, colors, graphics, signage, and materials
  - **Running ways** – branded using barriers, pavement markings/materials/colors, graphics, signage, and landscaping


Swift
SOUTHBOUND
Swift
© 2009 Dave Honan


BRT

Implementation

	Commuter Rail	LRT/ Heavy Rail	Streetcar	BRT
Time to Implement	3-7 years	7-10 years+	4-7 years	2-5 years
Political Difficulty	Moderate but increasing	High and increasing	Moderate	Low to Moderate
Responsiveness to shifting commute patterns	None to very low	None to very low	Low	High

Key Vehicle Design Differences

- **BRT**
  - Smaller but more nimble
  - Operates as single
  - Typical length = 40’-60’
  - Speed = up to 65 mph
  - Capacity = 60 - 90 (seated + standing)
- **Light Rail**
  - Larger vehicles
  - Can connect 2-4 cars
  - Typical length = 90’-100’
  - Speed = up to 60 mph
  - Capacity = 170-200 (seated + standing)

Examples of ITS – Passenger Information

Los Angeles Rapid (from MTA)

York (ON) viva (from flickr.com)


Station sign (from TranSystems)


Vancouver B-Line (from TransLink & IBI Group)

On-board passenger information (from DMJM+HARRIS)

Station sign (from TranSystems)

Bicycle Accommodation

- **Issues**
  - Available space
  - Safety
  - Dwell time impacts
- **Experience:**

Front-mounted bicycle rack
SOURCE: www.kcata.org

Front-mounted bicycle rack
SOURCE: KAI

Agency	Bike Racks	Notes
L.A. - Orange Line*	Exterior	Initially interior but bike community protested and racks were placed outside
Las Vegas*	Interior	Placed a bike logo on rear door & received excellent feedback
Boston*	Interior	Only allows bikes during certain times of day
Eugene*	None	Bikes allowed on bus but no racks available
Oakland - San Pablo Rapid**	Exterior	Bikes allowed inside between 12 and 5:30 a.m. if space permits or rack is full
L.A. - Metro Rapid	Exterior	
Kansas City	Exterior	Bike racks on stylized bus

*Articulated buses **Standard-length and articulated buses

BRT and Land Development

Cleveland

Curitiba, Brazil

Brisbane, Australia

Ottawa, Canada

Boston Silver Line: $1.2 billion after Phase 1

- **Factors:**
  - Active help in parcel
  - sales
  - Street reconstruction
- **Results:**
  - $250 million in new construction
  - $93 million in rehab
  - 1,731 new or rehab housing units
  - 900 designated as “affordable”
  - 128K sq. ft. new/renov. retail

Cleveland Health Line Economic Impact: (Fixed Guideway BRT)

By 2025:

- 7.9 million sq. ft. in commercial development
- 5400+ new or renovated residential units
- $1.3 billion in capital investments
- $62.1 million in annual local taxes
- $1.98 million in annual GCRTA sales tax revenues
- 13,000 new jobs

Source: Greater Cleveland RTA

- **Factors:**
  - Curb-to-curb rebuilding of street
  - Rebuilt and new utilities
  - New sidewalks, streetlights and landscaping

Denver 16th Street Mall

- Opened 1982 as urban development project:
  - 1-mi. exclusive corridor
  - Frequent electric shuttle service
  - Express bus stations at both ends
  - Now connected to LRT

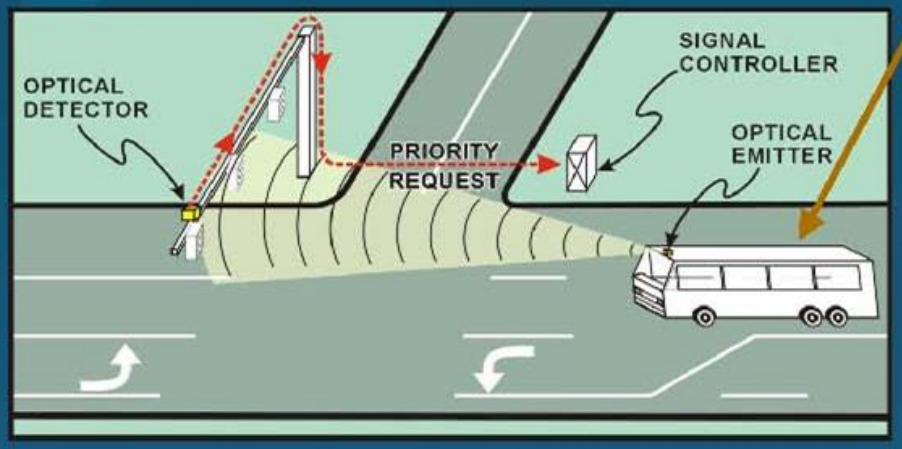
- Results:
- 60,000 riders/weekday
- The real development catalyst in downtown
- 18-hour commercial days

"Metroway" Alexandria, VA

- Opened August 2014:
  - 0.8-mile bus-only corridor (Phase I)
  - Premium bus service between Crystal City and Braddock Rd Metrorail stations
  - Part of economic development along Jefferson Davis Highway

- Results:
  - Steady growth in ridership
  - Increased reliability of bus service
  - Rapid land development along Jefferson Davis Highway
  - Supports new Metrorail station at Potomac Yard development
  - Phase II bus-only corridor extension to Crystal City opens in 2015

Examples of Bus Preferential Treatment

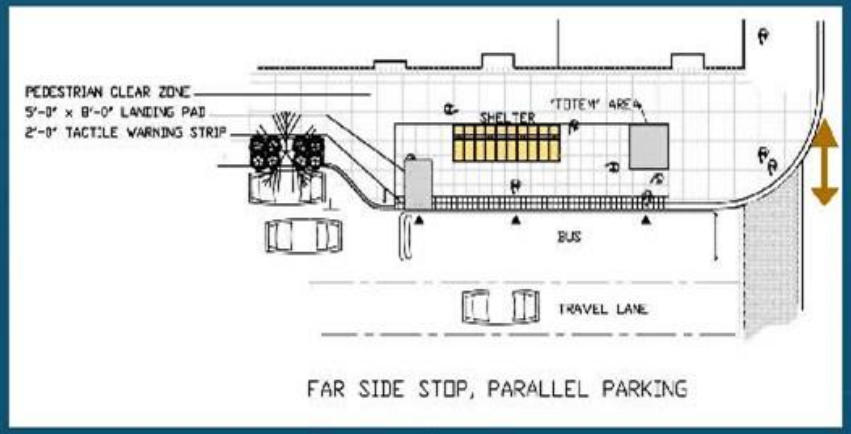


Transit signal priority

Approaching BRT vehicle may get a green light if it is behind schedule.

BRT uses special lane to bypass stopped cars.

Queue jump



Curb extension

Widened sidewalk at BRT station means bus does not have to wait to merge back into travel lane to leave station.

LA Orange Line Bike Accommodations

BRT Cost Range

BRT – "Lite"
Swift BRT - Everett

Low cost

"In Between" BRT
Eugene EmX

Mid range cost

Full BRT
Orange Line - LA

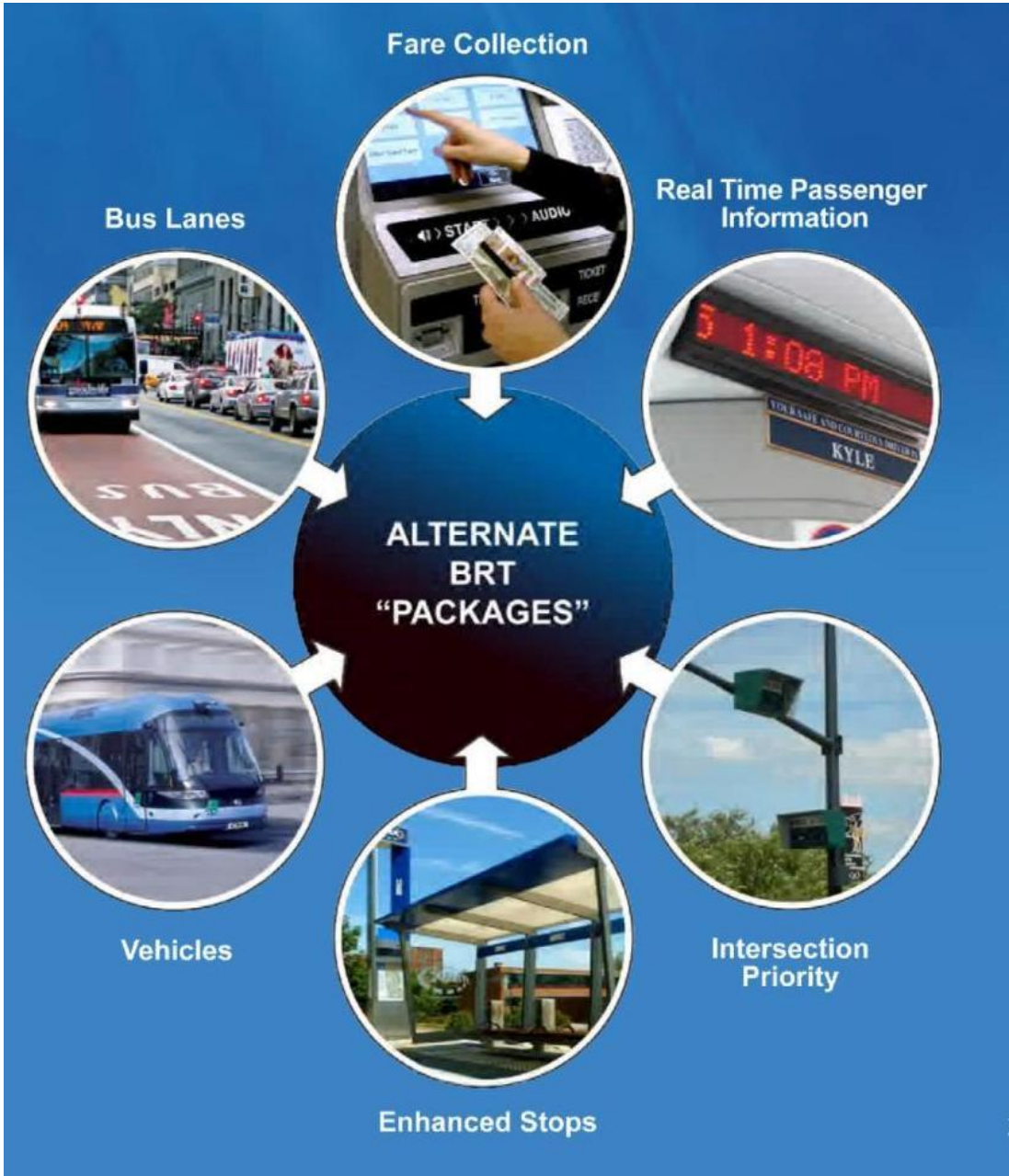
Cost approaches lower range of streetcar / LRT

How Can You Help?

- How do you want to use BRT?
  - Length of trips
  - Where do you want to go?
  - Throughout the region or a local trip?
  - How to get to the station?
    - Walk?
    - Drive and park?
    - Other transit
- How do you see it fitting in?
  - Dedicated corridors
  - In-street options

So yes, BRT is a menu…or a recipe

- But…



…you can help make the recipe.

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Tunnel segments	CNG	Multimodal terminal	Minimal brand	Wi-fi
Shared or semi-exclusive lanes	Hybrid-electric		Family of brands	Vehicle location

What Is Bus Rapid Transit (BRT), and What it Can Do for Your Community

Thank You!



Montgomery County
RAPID TRANSIT

BRT CORRIDOR STUDIES

SHA State Highway Administration

Montgomery County Maryland

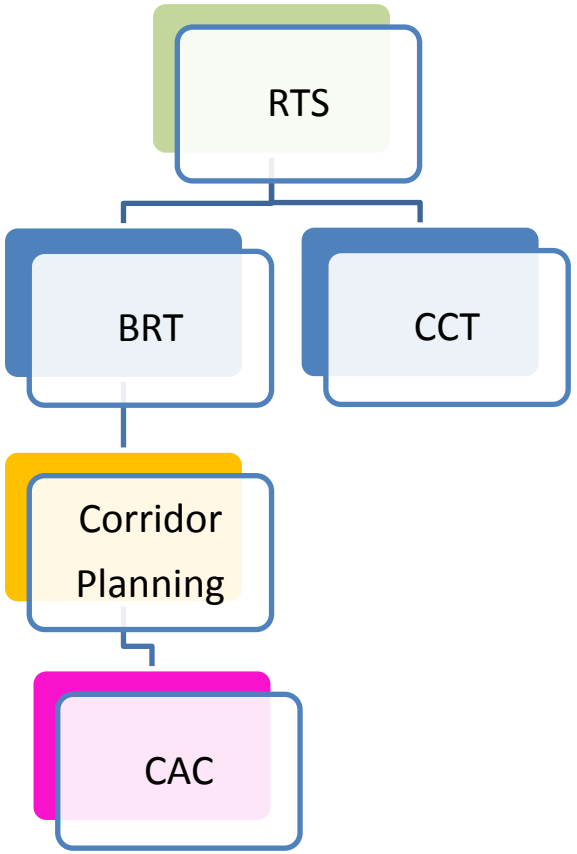
MTA Maryland

Montgomery County's Rapid Transit System (RTS)

Joana Conklin
RTS Development Manager
MCDOT Rapid Transit System

Montgomery County's Rapid Transit System (RTS)

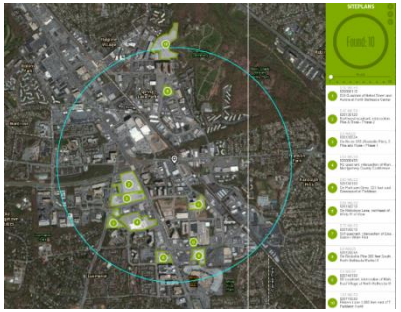
- **Purpose**
  - Growth & Jobs
  - Problem & Opportunities
  - C & A
  - Funding & Project Status
  - Process & Progress
- **Need**
  - CACs -You! We're on a mission!

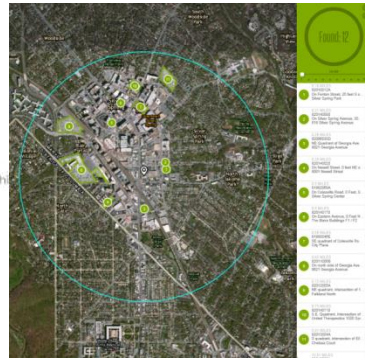


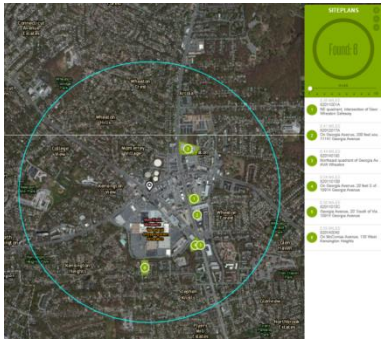
Growth & Jobs


Frederick County
Howard County
Clarksburg
270
MD 355 North
3
Germantown
Gaithersburg
Olney
CCT
1
Georgia Avenue (North)
Burtonsville
Rockville
MD 586/Veirs Mill Road
10
US 29/Columbia Pike/
Colesville Road
9
MD 355 South
4
Colesville
7
Randolph Road
Prince George's County
North Bethesda
Transitway
6
2
Georgia Avenue
(South)
495
5
MD 650/New Hampsh
8
University Boulevard
Silver
Spring
495
Bethesda
Washington, D.C.


Street:
Go
Clear
Identify
Projects List
Plan#
Project Name
119811420
Qiagen-Germantown Business Pa
119820680
West Farm
119850560
Garrett Property
119861150
Montgomery County Medical Cent
119861860
Hanover Shady Grove (Shady Gro
119870120
Churchill Far North Village
119870800
Armenain Youth Center
119871900
City Place
119872710
Milestone Industrial
10 km
5 mi







Problem & Opportunities

	2013	2040	difference	percent difference
Population	997,884	1,203,643	205,759	21%
Employment	529,267	737,364	208,097	39%
Transit work trips	165,121	198,513	33,392	20%
Vehicle work trips	376,269	461,248	84,979	23%
Truck trips	83,024	100,344	17,320	21%
VMT	21,952,932	26,795,176	4,842,244	22%
VMT per capita	22.0	22.3	0.3	1%
Lane-miles*	2,592	2,721	129	5%
Lane-miles of congestion	376	639	263	70%

Source: MWCOG

* Modeled lane miles include freeways, arterials, and many collectors, but few local roads.

C & A

- **Challenge**
  - Meet increased mobility needs
  - Invest in multi-modal transportation – specifically in transit and choices for our residents!
- **Addressing the Challenge**
  - Expand frequent, reliable transit service to move greater numbers of people to and from jobs, homes, shopping, and entertainment areas.
  - Reduce the gap between transportation demand and supply and provide County residents a viable and reliable alternative to travel by auto on congested roadways.

Why RTS ? Why BRT ?

- RTS - Delivers improved, accessible, cost-effective transit service linking the existing system to County activity centers
  - Improve bus transit operations through roadway and traffic control designs that allow for improved bus speeds
  - Provide an environmentally prudent and sustainable transportation alternative to automobile use and ownership
  - Improve accessibility to employment and services for transit dependent populations
  - Support planned transit-oriented development and redevelopment opportunities

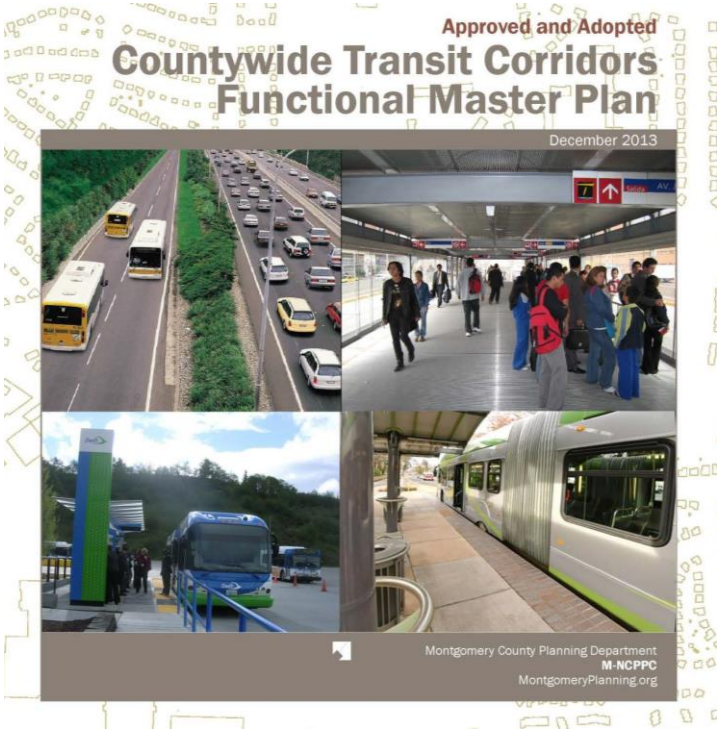
- BRT
  - Makes more efficient use of rights-of-way (maximizes person throughput)
  - Flexibility
  - Reliability
  - Ability to attract “choice” riders
  - Cost effective

RTS Funding & Project Status

- To date, MCDOT has dedicated $11 million for BRT corridor studies
- MDOT has programmed another $10M to advance BRT corridor planning on MD 355 and US 29 (Colesville Road)
- Planning studies being performed by SHA; close coordination with MCDOT and MTA
- Expected completion Summer 2016

Process & Progress

- The Master Plan recommends 10 BRT corridors, the initial priority is to conduct three (3) corridor studies:
  - MD 355 (both North and South segments)
  - US 29
  - MD 586 (Veirs Mill Road)

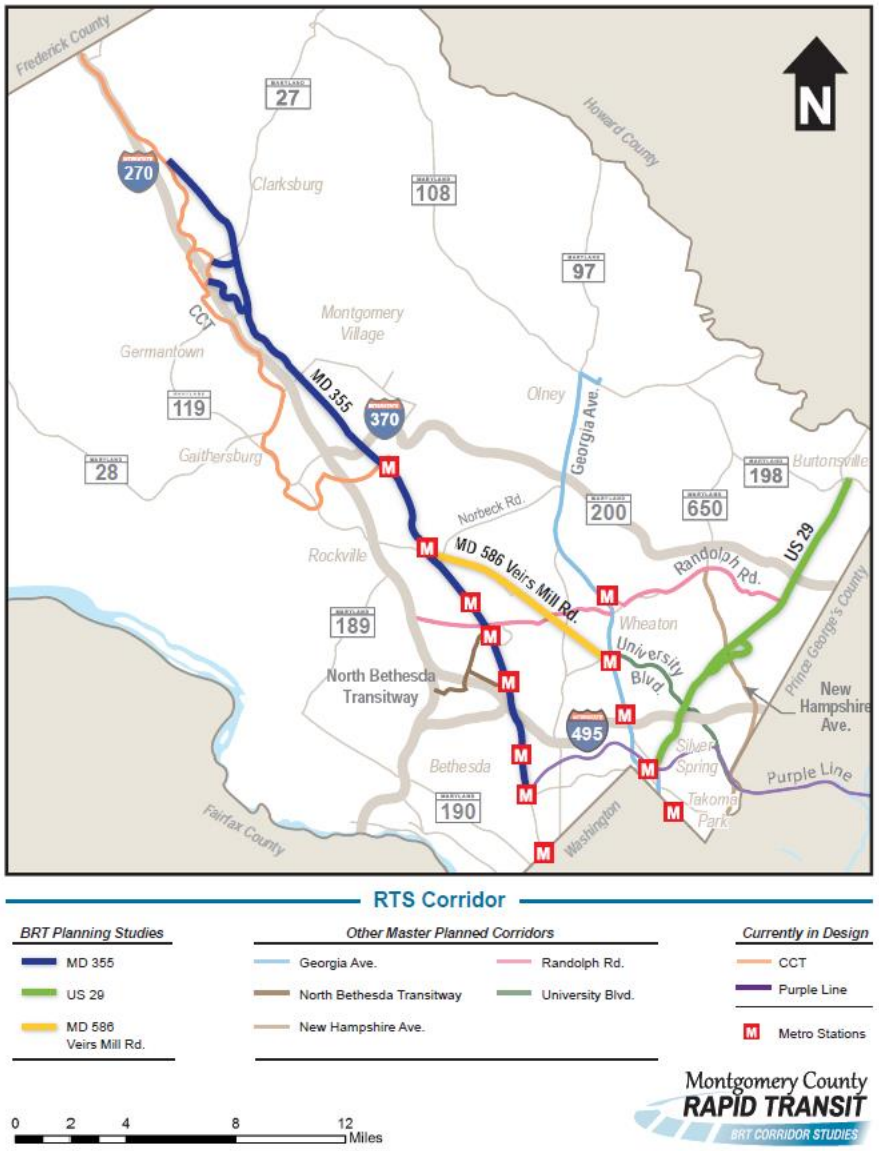


BRT Corridors

Corridor	Corridor Size (directional miles)	# of Stations
MD 355 North	14.1	20
MD 355 South	9.3	14
US 29	11.0	11
Veirs Mill Road	6.2	11
New Hampshire Avenue	8.5	12
Randolph Road	10.1	11
University Boulevard	5.5	9
North Bethesda Transitway	2.7	7
Georgia Ave North	9.5	13
Georgia Ave. South	3.7	8

Source: Montgomery County Countywide Transit Corridor Functional Master Plan

BRT Corridors Under Study

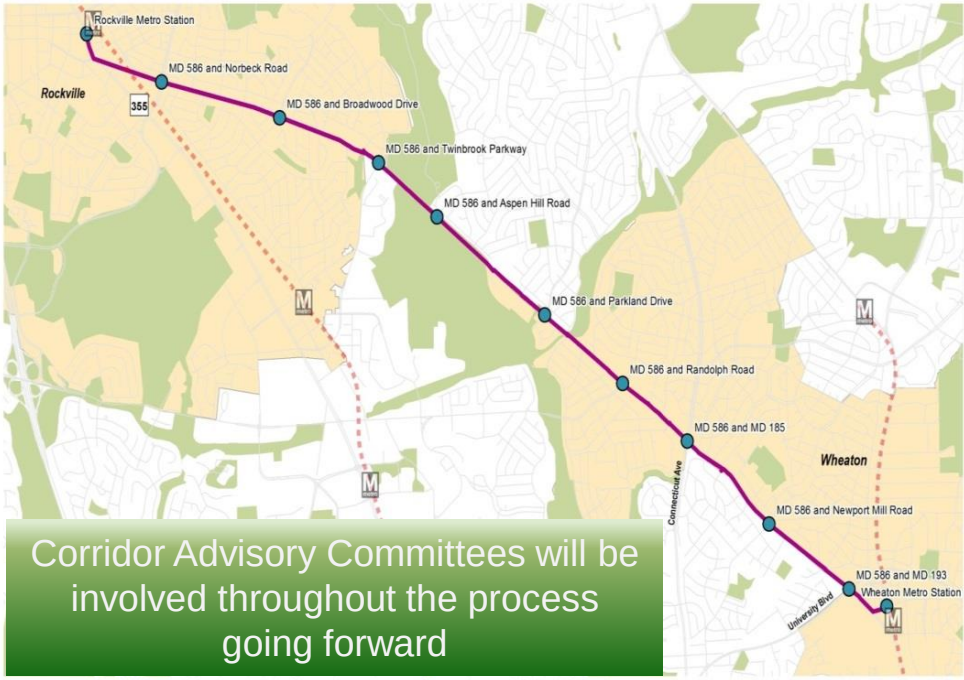


Veirs Mill Rd. (MD 586) BRT Corridor Planning Study

- Included tasks:

(green are completed)

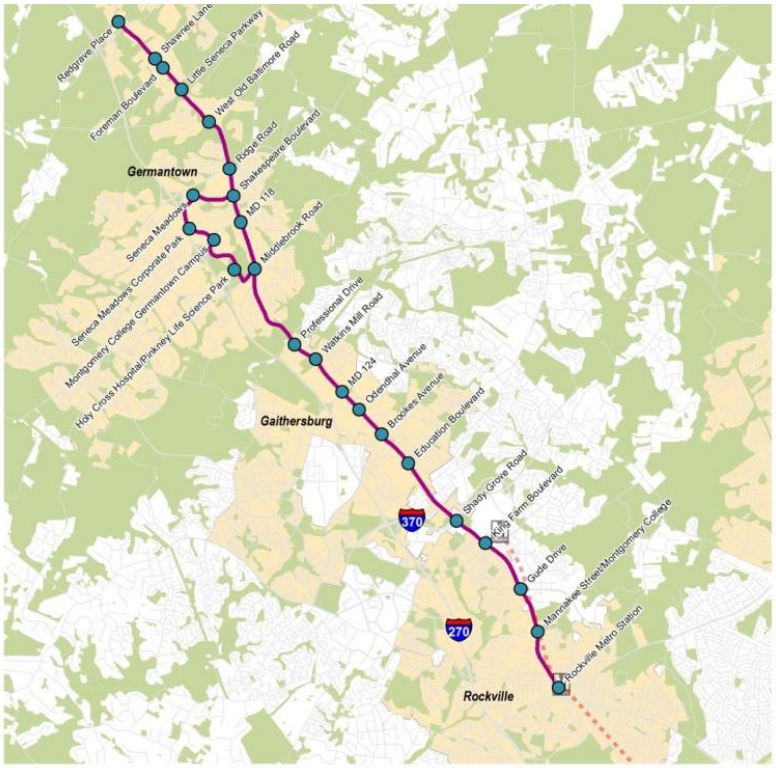
- Data collection (ex. Traffic, land use, environmental, etc.)
- Purpose and Need
- Preliminary corridor alternative development
- Alternatives Retained for Detailed Study (ARDS)
- Selection of Locally Preferred Alternative
- Phasing Plan

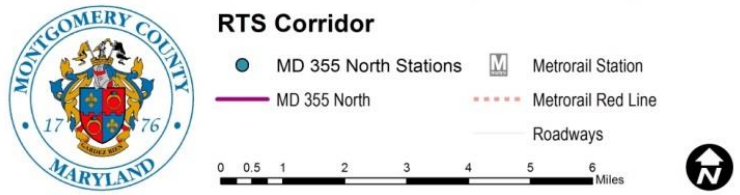


MD 355 BRT Corridor Planning Study

Montgomery County RAPID TRANSIT MD 355

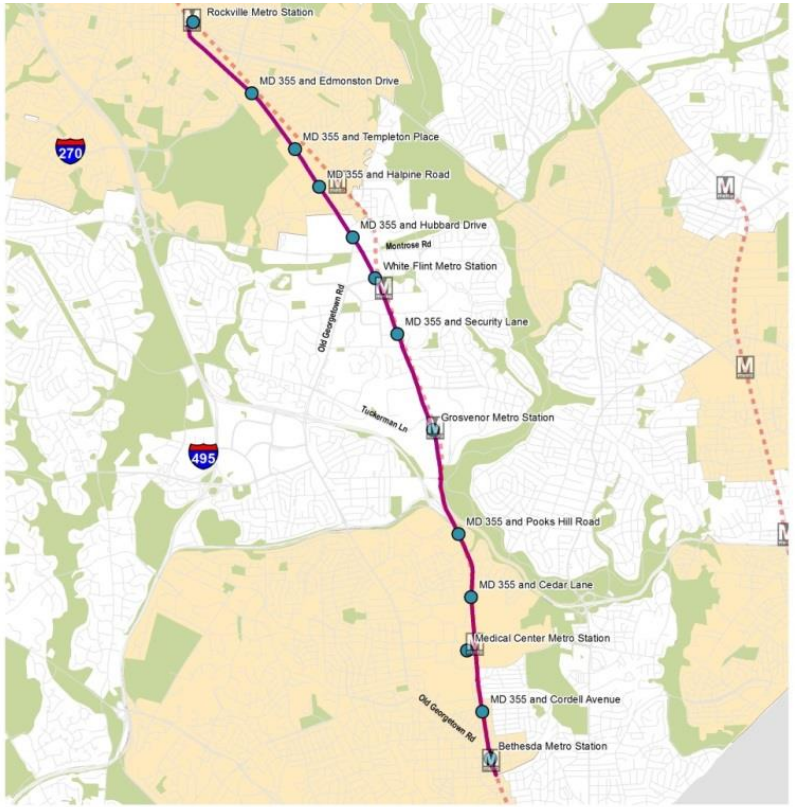
North

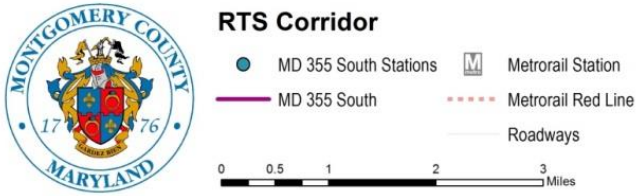




Montgomery County RAPID TRANSIT MD 355

South

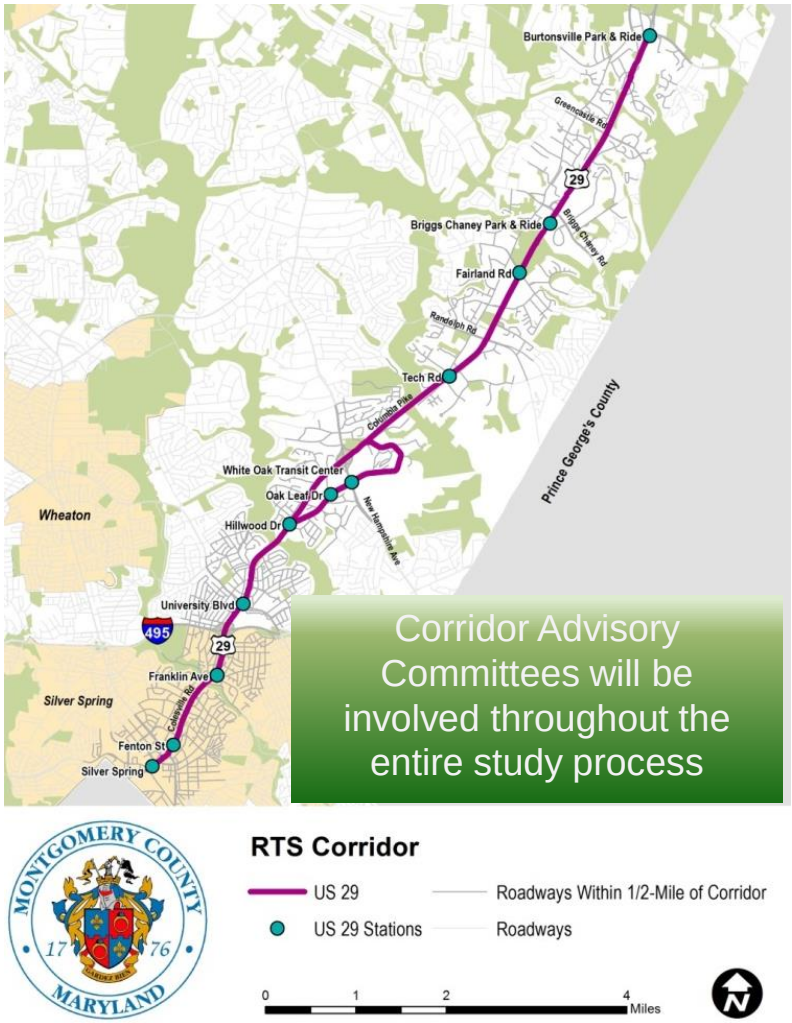




montgomerycountymd.gov/rts

MD 355 & US 29 BRT Corridor Planning Studies

- Included tasks:
  - Data collection (ex. Traffic, land use, environmental, etc.)
  - Purpose and Need
  - Preliminary corridor alternative development (planning level engineering and environmental analysis)
  - Preliminary cost estimates



Corridor Advisory Committees (CACs) Council Mandate

"A vital facet of facility planning is to receive input and feedback from affected property owners, civic and business groups, and transit riders and road users, … Accordingly, a citizens' advisory group comprised of residents, business owners and other relevant stakeholders must be created for each corridor which enters into facility planning to make recommendations to the County on the design, construction and proposed station locations for the transit corridor."

You Have Been Chosen!

- **Approximately 150 total CAC members**
- **The CAC Mission is to:**
  - Give
  - Provide
  - Fulfill
  - Study and discuss
  - Serve
  - Share

Expectations of CAC Process

- The CACs will meet regularly with the project team to review information, ask questions and provide feedback. This feedback will be reviewed by the project team and meeting summaries will be published on the project website. The CACs are advisory committees and not decision-making committees.
- Public involvement through public workshops, community meetings and the project website will allow the general public to provide input and feedback as the corridor studies progress.

Thank you

Joana Conklin

Rapid Transit System Development Manager

Montgomery County Department of Transportation

Office of the Director

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Rockville, MD 20850

240-777-7195

Joana.Conklin@montgomerycountymd.gov